

Serial No. 09/992,599  
Attorney Docket No. D546  
Firm Reference No. AMDSP0212USA

Reply to Office Action Dated March 12, 2004  
Reply Dated March 25, 2004

**AMENDMENTS IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Cancelled)
2. (Currently Amended) The method of claim 1 33, wherein atomic force microscopy is used in the detecting of the topology of the at least one layer.
3. (Cancelled)
4. (Previously Presented) An alignment method comprising:
  - detecting a topology of at least one layer;
  - determining an apparent location of a metrology mark;
  - adjusting the apparent location of the metrology mark to determine an adjusted location of the metrology mark; and
  - aligning another layer according to the adjusted location of the metrology mark, wherein adjusting the apparent location of the metrology mark adjusts for optical horizontal shift.
5. (Currently amended) The method of claim 1 34, wherein determining the apparent location of the metrology mark is determined by determining a topological variation in a topology of the another layer relative to the topology of the at least one layer.
6. (Previously Presented) An alignment method comprising:
  - detecting a topology of at least one layer;
  - determining an apparent location of a metrology mark;
  - adjusting the apparent location of the metrology mark to determine an adjusted location of the metrology mark; and

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aligning another layer according to the adjusted location of the metrology mark,  
wherein determining the apparent location of the metrology mark is determined by  
determining a topological variation in a topology of the another layer relative to the  
topology of the at least one layer,  
wherein adjusting the apparent location of the metrology mark adjusts for  
topological horizontal shift.

7. (Previously Presented) The method of claim 5, wherein planarization is performed on  
a surface of the at least one layer prior to determining the apparent location of the metrology  
mark.

8. (Previously Presented) An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;  
adjusting the apparent location of the metrology mark to determine an adjusted  
location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein adjusting the apparent location of the metrology mark includes an  
adjustment for at least one predetermined factor.

9. (Previously Presented) An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;  
adjusting the apparent location of the metrology mark to determine an adjusted  
location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein adjusting the apparent location of the metrology mark includes an  
adjustment for at least one non-predetermined factor.

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10-14. (Cancelled)

15. (Original) An apparatus for aligning comprising:

a detector for detecting a topology of at least one layer to determine an apparent location of a metrology mark, the apparent location of the metrology mark being offset from the actual position of the metrology mark by a distortion amount; and

a mask which is aligned according to the apparent location and adjustment information,

wherein the adjustment information corresponds to the distortion amount.

16. (Original) The apparatus of claim 15, wherein the detector is an atomic force microscope.

17. (Original) The apparatus of claim 15, wherein the detector is an optical detector.

18. (Original) The apparatus of claim 15, further comprising a planarizer that performs chemical-mechanical polishing.

19. (Original) The apparatus of claim 15, wherein the adjustment information is derived from at least one predetermined factor.

20. (Original) The apparatus of claim 15, wherein adjustment information is derived from at least one non-predetermined factor.

21. (Original) The apparatus of claim 15, further comprising a controller which selects the next processing step in accordance with information provided by the detector.

22-31. (Cancelled)

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32. (Currently Amended) ~~The method of claim 3;~~ An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;  
adjusting the apparent location of the metrology mark to determine an adjusted  
location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein the another layer is formed on the at least one layer,  
wherein determining the apparent location of the metrology mark is determined  
optically, and  
wherein adjusting the apparent location of the metrology mark adjusts for optical horizontal shift.
33. (Currently Amended) ~~The method of claim 5;~~ An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;  
adjusting the apparent location of the metrology mark to determine an adjusted  
location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein the another layer is formed on the at least one layer,  
wherein determining the apparent location of the metrology mark is determined by  
determining a topological variation in a topology of the another layer relative to the topology of  
the at least one layer, and  
wherein adjusting the apparent location of the metrology mark adjusts for topological horizontal shift.
34. (Currently Amended) ~~The method of claim 1~~ An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;

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adjusting the apparent location of the metrology mark to determine an adjusted location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein the another layer is formed on the at least one layer,  
wherein adjusting the apparent location of the metrology mark includes an adjustment for at least one predetermined factor.

35. (Currently Amended) ~~The method of claim 1~~ An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;  
adjusting the apparent location of the metrology mark to determine an adjusted location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein the another layer is formed on the at least one layer,  
wherein adjusting the apparent location of the metrology mark includes an adjustment for at least one non-predetermined factor.

36. (Currently Amended) The method of claim 1 ~~37~~, wherein the detecting the topology of the at least one layer is performed without coming into physical contact with a surface of the at least one layer.

37. (Currently Amended) ~~The method of claim 1~~ An alignment method comprising:  
detecting a topology of at least one layer;  
determining an apparent location of a metrology mark;  
adjusting the apparent location of the metrology mark to determine an adjusted location of the metrology mark; and  
aligning another layer according to the adjusted location of the metrology mark,  
wherein the another layer is formed on the at least one layer,

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wherein the apparent location of the metrology mark is offset from the adjusted location of the metrology mark by a distortion amount.